

What is claimed is:

1. A semiconductor device production method comprising the steps of:

(a) forming an insulative film on an underlying substrate;

5 (b) forming a semiconductor layer on the insulative film;

(c) bonding a flexible substrate onto the semiconductor layer;
and

(d) separating the semiconductor layer on the flexible substrate from the insulative film on the underlying substrate.

10 2. A semiconductor device production method as set forth in claim 1,

wherein the semiconductor layer formed in the step (b) is a crystalline Si layer,

wherein the step (b) comprises the steps of:

15 (b1) forming an a-Si layer on the insulative film;

(b2) forming a catalytic layer on the a-Si layer;

(b3) crystallizing the a-Si layer in contact with the catalytic layer into the crystalline Si layer through a catalytic reaction; and

(b4) removing the catalytic layer.

20 3. A semiconductor device production method as set forth in claim 1, further comprising the step of forming a semiconductor element in the semiconductor layer after the step (b).

4. A semiconductor device production method as set forth in claim 2, wherein the step (b1) comprises the step of patterning the

25 a-Si film to segment the a-Si film after the formation of the a-Si

film.

5. A semiconductor device production method as set forth in claim 2, wherein the step (b2) comprises the step of patterning the catalytic layer after the formation of the catalytic layer.

5 6. A semiconductor device production method as set forth in claim 1, wherein the insulative film is cleaved or etched away for the separation in the step (d).

7. A semiconductor device produced by a semiconductor device production method as recited in claim 1, wherein the
10 semiconductor layer has a thickness of 25 μ m to 100 μ m.

8. A semiconductor device as set forth in claim 7, wherein the semiconductor layer is a crystalline Si layer.

9. A semiconductor device production method comprising the steps of:

15 (e) forming an insulative film on an underlying substrate and patterning the insulative film to form a recess in the insulative film;

(f) forming a semiconductor layer on the insulative film, the semiconductor layer having a thick film portion located on a portion of the insulative film formed with the recess and a thin
20 film portion located on a portion of the insulative film adjacent to the recess;

(g) separating the semiconductor layer on the flexible substrate from the insulative film on the underlying substrate;
and

25 (h) bonding a flexible substrate onto a surface of the

separated semiconductor layer which has been opposed to the underlying substrate.

10. A semiconductor device production method as set forth in claim 9,

5 wherein the semiconductor layer formed in the step (f) is a crystalline Si layer,

wherein the step (f) comprises the steps of:

(f1) forming an a-Si layer on the insulative film;

(f2) forming a catalytic layer on the a-Si layer;

10 (f3) patterning the catalytic layer so as to leave a portion of the catalytic layer on the a-Si layer in the recess;

(f4) crystallizing the a-Si layer in contact with the catalytic layer into the crystalline Si layer through a catalytic reaction; and

(f5) removing the catalytic layer.

15 11. A semiconductor device production method as set forth in claim 9, further comprising the step of forming a semiconductor element in at least one of the thick film portion and the thin film portion after the step (f).

20 12. A semiconductor device production method as set forth in claim 9, further comprising the step of forming a circuit having a high breakdown voltage element in the thick film portion and forming a circuit having no high breakdown voltage element in the thin film portion after the step (f).

25 13. A semiconductor device production method as set forth in claim 9, wherein the insulative film is cleaved or etched away for

the separation in the step (g).

14. A semiconductor device produced by a semiconductor device production method as recited in claim 9, wherein the semiconductor layer has a thickness of 25 μ m to 50 μ m.

5 15. A semiconductor device as set forth in claim 14, wherein the semiconductor layer is a crystalline Si layer.